

Section 9.0. Tuberculosis Control	Page 1 of 1
Subsection: Table of Contents	Issued 7/1/99

TUBERCULOSIS CONTROL

TABLE OF CONTENTS

- 9.0 Tuberculosis Control**
- 9.1 Guidelines for Screening for Tuberculosis in Long Term Care Facilities
 - Figure 9.1-1. Tuberculin Testing Record
 - Figure 9.1-2. Annual Statement for Tuberculin Reactors
- 9.2 Guidelines for Tuberculosis Contact Investigation in Long Term Care Facilities
 - Figure 9.2-1. Disease Case Report Form (CD-1)
 - Figure 9.2-2. Tuberculosis Drug Monitoring Form (TBC-1)
- 9.3 Transfer of Residents With Suspected or Confirmed Tuberculosis
- 9.4 Instructions for Facilities Equipped to Manage Residents With Suspected or Confirmed Tuberculosis

Section 9.0. Tuberculosis Control	Page 1 of 6
Subsection 9.1 Screening for Tuberculosis in Long Term Care Facilities	Issued 7/1/99

TUBERCULOSIS CONTROL

Guidelines for Screening for Tuberculosis In Long Term Care Facilities

The control and prevention of tuberculosis in the elderly must be accomplished in order to eliminate tuberculosis as a public health problem.

Many of the elderly were infected with tuberculosis years ago, with the tubercle bacilli dormant most of the time. When the initial infection occurs and the bacilli begin to multiply, the normal immune system can quickly overcome the problem. As the body ages, the immune system becomes less active, and other medical problems may develop which further increase the risk of tuberculosis infection becoming active disease. If tuberculosis disease is in the lung, which is the most common site, the person may start coughing and expelling the organisms into the air. This can be especially devastating in a long-term care facility, where many susceptible elderly persons are sharing the same air.

It is therefore important for each facility to have a tuberculosis control program in place. This must include the documentation of the tuberculosis status of each resident, staff member and volunteer of each long-term care facility. This can best be accomplished by screening residents on admission, and pre-employment and annual testing of employees and volunteers as outlined below.

Recommendations for Residents

All residents new to long-term care who do not have documentation of a previous skin test reaction $\geq 10\text{mm}$ or a history of adequate treatment of tuberculosis infection or disease, shall have the initial test of a Mantoux PPD two-step skin test to rule out tuberculosis within one month prior to or one week after admission as required by Department of Health rule 19 CSR 20-20.100 (See Appendix E). If the initial result is 0-9mm, the second test, which can be given after admission, should be given at least one week and no more than three weeks after the first test. **The result of the second test is used as the baseline.** Documentation of a chest x-ray ruling out active pulmonary tuberculosis within one month prior to admission, along with an evaluation to rule out signs and symptoms of tuberculosis, may be acceptable by the facility on an interim basis until the Mantoux PPD two-step test is completed.

The two-step test is recommended due to the "booster phenomenon," which can occur at any age, but is more pronounced with increased age. The body's response to tuberculin, (the antigen in PPD), once that response has been established by infection with tuberculosis (or other mycobacteria), may gradually wane over the years. The initial test of two-step test may result in a falsely negative (0-9mm) reading. However, that initial test stimulates the body to respond normally to a subsequent test. This can cause confusion at a later time if the resident is skin tested either as a result of symptoms of tuberculosis disease or as a contact to a newly

Section 9.0. Tuberculosis Control	Page 2 of 6
Subsection 9.1 Screening for Tuberculosis in Long Term Care Facilities	Issued 7/1/99

diagnosed infectious person. The "boosted" skin test then may appear to be the result of new infection, which puts the individual at much higher risk of progressing to tuberculosis disease. Therefore, it is imperative to purposely elicit this boosted response in all persons in whom it is important to know their tuberculosis status.

Skin test results of ≥ 10 mm, whether documented in the resident's medical history, obtained by the first test, or obtained by the second of the two-step test applied by the facility, require a chest x-ray to rule out current tuberculosis disease. It is important to also perform an evaluation to determine if signs or symptoms of tuberculosis (unexplained weight loss, fever, persistent cough) are present. Once tuberculosis disease is ruled out, it is important to record the results of the skin test in millimeters (mm), in a prominent place on the resident's medical record. Including the skin test result at the same place and in the same manner as the resident's allergies is appropriate.

Tuberculosis infection may progress to infectious tuberculosis disease and is therefore reportable to the Missouri Department of Health. See Figure 9.1-1 for a copy of the report form for tuberculosis infection. Since residents will be sharing air with others who, because of their age and other medical conditions, may be more susceptible to infection with tuberculosis, consideration of a routine course of infection treatment that kills tubercle bacilli and prevents progression to disease is recommended. This is especially important in infected persons of any age who have an **increased risk** of progressing to tuberculosis disease. Infected persons at increased risk to develop disease are:

- a) Persons with skin test reactions ≥ 5 mm with no symptoms of tuberculosis and no documented history of an adequate course of antituberculosis medications but with fibrotic lesions noted on chest x-ray.
- b) Persons with skin test reactions ≥ 5 mm with HIV infection and those with risk factors associated with HIV infection whose HIV status is unknown. Preventive therapy may be considered for HIV infected persons who have skin test reactions of < 5 mm in groups where the prevalence of tuberculosis is high.
- c) Close contacts of persons with newly diagnosed infectious tuberculosis who have skin test reactions of ≥ 5 mm.
- d) Recent skin test converters (≥ 10 mm increase within a 2 year period.) ALL children ≤ 4 years with a skin test reaction of ≥ 10 mm are included in this group.
- e) Persons with skin test reactions ≥ 10 mm and the following medical conditions:
 1. Diabetes mellitus
 2. Prolonged corticosteroid therapy (> 15 mg of Prednisone or equivalent daily for 2-3 weeks)
 3. Immunosuppressive therapy

Section 9.0. Tuberculosis Control	Page 3 of 6
Subsection 9.1 Screening for Tuberculosis in Long Term Care Facilities	Issued 7/1/99

4. Hematologic and reticuloendothelial diseases (i.e., leukemia or Hodgkin's disease)
5. IV drug users
6. End stage renal disease
7. Chronic undernutrition (i.e., intestinal bypass surgery, gastrectomy, chronic ulcer disease, chronic malabsorption syndrome, chronic alcoholism, cancer of the oropharynx and upper GI tract)

In addition, even in the absence of any of the above risk factors, the following persons with skin test readings ≥ 10 mm are recommended for preventive treatment:

- (1) Foreign-born persons from Latin America, Asia, Africa
- (2) Medically underserved low income populations, including high-risk racial or ethnic minority populations, especially black, Hispanic, and native Americans
- (3) Residents, employees and volunteers of long-term care facilities, other health care facilities, schools and child-care facilities

Annual skin tests for residents with documented results < 10 mm are not required, nor are annual chest x-rays for residents with documented skin test results ≥ 10 mm. Staff persons must be constantly vigilant for signs and symptoms of tuberculosis in residents, and obtain a chest x-ray and sputum specimens should such signs and symptoms appear. In addition, residents are to be evaluated, at least annually, to assure absence of signs and symptoms for tuberculosis disease. (See Figure 9.1-2.)

Recommendations for Employees

The results of annual tuberculin testing of employees in a long-term care facility are a good indicator of the extent of transmission of tuberculosis within that facility. The following occupationally-exposed persons should be tested at least annually: all employees, attending physicians and dentists, volunteers who spend ≥ 10 hours weekly in the facility, nursing and allied health personnel, students, instructors and other individuals in regular attendance within long-term care facilities. Every facility should have a tuberculosis surveillance program that includes the following procedures:

1. **Initial Examination.** Provide a tuberculin skin test (Mantoux, 5 tuberculin units (TU) of purified protein derivative (PPD)) to all employees during pre-employment procedures, unless a previous reaction ≥ 10 mm is documented. If the initial skin test result is 0-9 mm, a second test should be given at least one week and no more than three weeks after the first test. The results of the second test should be used as the baseline in determining treatment and follow-up of these employees. The two-step test regimen is optional for employees with a history of negative skin tests within the last two years.

Section 9.0. Tuberculosis Control	Page 4 of 6
Subsection 9.1 Screening for Tuberculosis in Long Term Care Facilities	Issued 7/1/99

A history of BCG (bacille Calmette-Guerin) does not preclude an initial screening test, and a reaction of 10 mm or more should be managed as a tuberculosis infection. A chest x-ray examination should be provided for employees who have a skin test reaction ≥ 10 mm or who have symptoms compatible with pulmonary tuberculosis in order to determine the presence of current disease.

2. **Repeat Tuberculin Skin Tests.** The Department of Health rule states employees will be skin tested on an annual basis as a means of surveillance within a facility. Infection treatment is recommended for all infected employees, unless specifically contraindicated, to prevent them from developing disease and infecting others. Infected employees who are without disease and who do not complete a course of preventive therapy will need an individualized plan of surveillance. Those who are at high risk of developing disease, i.e. converters, should be assigned where they cannot expose small children, immunocompromised patients, and others for whom the consequences of infection may be especially serious.
3. **Repeat Chest X-Ray.** After the initial evaluation of persons with skin test reactions ≥ 10 mm, routine repeated chest x-rays are not recommended. They are not a substitute for infection treatment nor vigilance for signs and symptoms of tuberculosis disease. An annual sign and symptom review should be documented in their record. (See Figure 9.1-2.) Employees who have completed an adequate course of disease or infection treatment should be exempt from further chest x-rays unless they become symptomatic.
4. **Reactors with Symptoms of Tuberculosis.** All persons with significant reactions to the tuberculin skin test and symptoms of tuberculosis must seek a medical evaluation and be deemed non-infectious prior to returning to work. Persons with significant reactions and no symptoms of tuberculosis may start work prior to obtaining a chest x-ray as long as one is obtained as soon as possible.
5. **Contact Investigations.** When there is an exposure to a suspected or recently diagnosed case of tuberculosis, a contact investigation should be conducted. Each person exposed who previously had a negative reaction to the skin test should receive a tuberculin test. Those who are still negative should be retested three months after exposure. Preventive therapy should be given to high-risk contacts with negative skin tests since they may be infected even though their skin tests have not yet converted.

Chest x-rays should be provided for employees whose skin test reactions increase >6 mm from <10 mm to ≥ 10 mm. Treatment for infection or disease should be provided according to the results of the x-ray.
6. **Evaluation.** The data generated from this testing should be analyzed periodically to determine and revise policies. The best index of the effectiveness of the program will be the absence of new infections in employees.

Section 9.0. Tuberculosis Control	Page 5 of 6
Subsection 9.1 Screening for Tuberculosis in Long Term Care Facilities	Issued 7/1/99

Reporting and Technical Advice

Contact your local public health agency or the Missouri Department of Health, Section of Vaccine-Preventable and Tuberculosis Disease Elimination at (573) 751-6122 or (800) 611-9212.

Missouri Department of Health
Section of Vaccine-Preventable and
Tuberculosis Disease Elimination
1995

Section 9.0. Tuberculosis Control	Page 6 of 6
Subsection 9.1 Screening for Tuberculosis in Long Term Care Facilities	Issued 7/1/99



MISSOURI DEPARTMENT OF HEALTH
TUBERCULIN TESTING RECORD

A. PATIENT IDENTIFYING INFORMATION				E. REASON FOR TESTING			
NAME (LAST, FIRST, MIDDLE INITIAL)		DATE OF BIRTH (MM/DD/YR)		SEX <input type="checkbox"/> MALE <input type="checkbox"/> FEMALE		<input type="checkbox"/> CONTACT TO TB CASE <input type="checkbox"/> EMPLOYMENT <input type="checkbox"/> MEDICALLY REFERRED	
HOME TELEPHONE		WORK TELEPHONE		SOCIAL SECURITY NUMBER		<input type="checkbox"/> SYMPTOMATIC (PERSISTENT COUGH FOR MORE THAN 3 WEEKS, FEVER, NIGHT SWEATS, WEIGHT LOSS)	
ADDRESS		RACE <input type="checkbox"/> WHITE <input type="checkbox"/> BLACK <input type="checkbox"/> AM. INDIAN OR ALASKAN NATIVE <input type="checkbox"/> ASIAN OR PACIFIC ISLANDER		ETHNIC ORIGIN <input type="checkbox"/> HISPANIC <input type="checkbox"/> NOT HISPANIC		RESIDENT/EMPLOYEE OF <input type="checkbox"/> LONG TERM CARE FACILITY <input type="checkbox"/> DEPARTMENT OF CORRECTIONS	
COUNTY		OCCUPATION				<input type="checkbox"/> HEALTH CARE FACILITY <input type="checkbox"/> SUBSTANCE ABUSE CENTER <input type="checkbox"/> SCHOOL/DAY CARE	
						<input type="checkbox"/> OTHER (COMMENT)	
I CONSENT TO A TUBERCULIN SKIN TEST FOR THE ABOVE REASON(S). I UNDERSTAND I AM TO HAVE THE SKIN TEST READ IN 48-72 HOURS BY THE DESIGNATED READER/INTERPRETER.				DATE			
CLIENT'S/GUARDIAN SIGNATURE							
F. X-RAY REFERRAL				G. TREATMENT/RECOMMENDATIONS			
CHEST X-RAY DONE		DATE DONE		RESULTS <input type="checkbox"/> NO <input type="checkbox"/> YES		<input type="checkbox"/> NORMAL <input type="checkbox"/> ABNORMAL	
<input type="checkbox"/> TUBERCULIN TEST POSITIVE <input type="checkbox"/> PREVENTIVE DRUG THERAPY TO BE INITIATED <input type="checkbox"/> PATIENT REFUSES PREVENTIVE THERAPY <input type="checkbox"/> NO FURTHER ACTION NEEDED - REASON:				<input type="checkbox"/> TUBERCULIN TEST NEGATIVE <input type="checkbox"/> PREVENTIVE DRUG THERAPY TO BE INITIATED <input type="checkbox"/> NO FURTHER ACTION NEEDED <input type="checkbox"/> FURTHER SUPERVISION RECOMMENDED			
PREVENTIVE THERAPY ORDERED FOR _____ MONTHS STARTING (MO/DAY/YR):							
MEDICATION AND DAILY DOSAGE:							
INH (DAILY DOSAGE)		OTHER (DAILY DOSAGE)		OR		INH (2 OR 3 x WEEKLY) OTHER (2 OR 3 x WEEKLY)	
MEDICATION PROVIDED BY: <input type="checkbox"/> HEALTH DEPARTMENT <input type="checkbox"/> PRIVATE PROVIDER							
H. RISK FACTORS							
MISSOURI DEPARTMENT OF HEALTH RECOMMENDATIONS FOR FOLLOW-UP AND PREVENTIVE TREATMENT — (CHECK APPROPRIATE RISK FACTOR(S)):							
1. <input type="checkbox"/> CONTACT TO TB CASE				2. <input type="checkbox"/> IMMUNOSUPPRESSED PERSON (e.g., IMMUNOSUPPRESSIVE THERAPY, HIV INFECTION OR MALIGNANCY)			
3. <input type="checkbox"/> ABNORMAL CHEST X-RAY (i.e., OLD HEALED TB)				4. <input type="checkbox"/> FOREIGN-BORN PERSON FROM AREAS WHERE TB IS COMMON			
5. <input type="checkbox"/> IV. DRUG USER AND/OR ALCOHOLIC				6. <input type="checkbox"/> RESIDENT OR EMPLOYEE OF CORRECTIONAL FACILITY, NURSING HOME, MENTAL INSTITUTION			
7. <input type="checkbox"/> CHILDREN YOUNGER THAN 4 YEARS OF AGE				8. <input type="checkbox"/> HOMELESS OR MIGRANT WORKERS			
9. <input type="checkbox"/> MEDICALLY UNDERSERVED, LOW INCOME POPULATIONS				10. <input type="checkbox"/> PERSON WITH DIABETES MELLITUS, POST-GASTRECTOMY, SILICOSIS, PROLONGED CORTICOSTEROID THERAPY OR 10% OR MORE BELOW IDEAL BODY WEIGHT			
11. <input type="checkbox"/> PERSONS WHO PROVIDE HEALTH CARE SERVICES OR TEACH HIGH-RISK GROUPS				12. <input type="checkbox"/> SKIN TEST CONVERTER WITHIN 2 YEARS			
COMMENTS:							
D. ATTENDING HEALTH CARE PROVIDER				PLEASE COMPLETE BACK OF FORM FOR PREVENTIVE TREATMENT (FOR REPORTING DISEASE-USE CD-1)			
NAME		DATE		TELEPHONE NUMBER		TBC-4	
TELEPHONE NUMBER		DATE		TELEPHONE NUMBER			
REPORTED BY		DATE		TELEPHONE NUMBER			
NAME		DATE		TELEPHONE NUMBER			
FACILITY		DATE		TELEPHONE NUMBER			
ADDRESS		DATE		TELEPHONE NUMBER			
TELEPHONE NUMBER		DATE		TELEPHONE NUMBER			

Figure 9.1-1

PREVENTIVE TREATMENT MONITORING

CONTINUATION

PATIENT'S NAME		DOB		Note: 6 months preventive treatment is recommended for all infected persons except for HIV positive individuals (12 months) and children (9 months).		HEALTH CARE PROVIDER SIGNATURE		DATE
DATE OF CLINIC VISIT/DRUG PICKUP						<input type="checkbox"/> COMPLETED TREATMENT <input type="checkbox"/> LOST, UNABLE TO LOCATE <input type="checkbox"/> DISCONTINUED DUE TO ADVERSE REACTIONS (SPECIFY): <input type="checkbox"/> OTHER (SPECIFY):		REASON TREATMENT STOPPED
DATE OF NEXT VISIT						TREATMENT COMPLETED (MONTH/DAY/YEAR)		TREATMENT STOPPED (MONTH/DAY/YEAR)
INH _____ mg Rx# _____ (Other) _____ mg Rx# _____ Vitamin B6 _____ mg Rx# _____ Liver Enzyme Collected (Y or N) Allergies (Y or N) ADVERSE EFFECTS: (Y or N) Fatigue, Weakness Fever, Chills Loss of Appetite Nausea Vomiting Jaundice Dark Brown Urine Rash, Itching Joint Pain Other Symptoms TAKING ANY OTHER DRUGS: (List) COMMENTS:								
(For additional comments, please use "Continuation" section or Progress Notes - N-3A)								
SIGNATURE								

C.H.N. SIGNATURE

**DIAGNOSTIC PROCEDURE: THE TUBERCULIN TEST
FOLLOW-UP OF TUBERCULIN TEST REACTIONS
ANNUAL STATEMENT FOR TUBERCULIN REACTORS**

NAME: _____

DOB : _____

- ☐ I am tuberculin positive. I have had the recommended course of treatment for tuberculosis infection or disease.
- ☐ I am tuberculin positive. I have had one negative chest x-ray since becoming tuberculin skin test positive.

This statement is to confirm that I DO NOT have symptoms consistent with pulmonary tuberculosis such as:

Cough lasting longer than three (3) weeks
Unexplained fever
Night sweats
Unexplained weight loss
Coughing up blood
Chest pain

If none of these symptoms are present, a chest x-ray is NOT NECESSARY.

If I develop any of these symptoms, I agree to seek immediate medical attention.

Signature

Date

Section 9.0. Tuberculosis Control	Page 1 of 4
Subsection 9.2 Guidelines for Tuberculosis Contact Investigation	Issued 7/1/99

TUBERCULOSIS CONTROL

Guidelines for Tuberculosis Contact Investigation In Long Term Care Facilities

The identification of an active case of tuberculosis in an employee, volunteer or resident of a long-term care facility may present some particularly difficult problems. Residents are usually elderly and therefore may be at greater risk of developing disease due to a recently acquired infection, as well as developing disease from a long-ago infection. This problem is compounded by the congregate living situation that potentially enhances the transmission of any communicable disease. In addition, tuberculosis may go unrecognized in debilitated elderly residents for months, resulting in prolonged exposure of a large number of staff and residents. It is important to "THINK TB".

When a long-term care facility receives information that an employee, volunteer or resident is diagnosed or suspected of tuberculosis, the facility should report to the local health unit. This report (See Figure 9.2-1) is required by Missouri Department of Health rule, 19 CSR 20-20.020. Reporting Communicable Diseases (See Appendix I). In addition to receiving the report, the local health unit will provide assistance in conducting the contact investigation as well as in obtaining antimycobacterial drugs, if desired. (In the absence of a local health unit, the district health office provides these services.)

Generally, the local or district health unit will conduct the investigation according to the following recommended procedures:

1. An estimate of how long the person was symptomatic and infectious will be made according to established criteria. It is important to remember that, because tuberculosis is transmitted by the airborne route, persons who sleep, live, work, or who are otherwise in contact with an infectious person through a common ventilation system for a prolonged time are "close contacts" at risk of acquiring infection.
2. The investigators will immediately arrange for tuberculin skin testing (Mantoux 5TU PPD) of the close contacts, including family members, friends, roommates, residents, and employees in the wing where the resident lived or the employee worked. This should be performed unless contacts have documentation of a prior skin test reaction ≥ 10 mm. (If two-step testing was not done at time of admission or employment, it may be done at this time.). If there is no evidence of recent infections (as evidenced by skin test reactions ≥ 5 mm) among these close contacts, it is appropriate to not extend the investigation at this time. If there is evidence of recent infection, the investigation should be broadened to include others who may have been in less close contact.

A repeat tuberculin test should be performed on contacts with reactions of <5mm three months after exposure has ended. At the time of the repeat testing, if there is evidence of recent infection, it may be appropriate to extend the investigation to those with less close contact to the index case.

Chest x-rays should be performed on all contacts whose skin test reaction is ≥ 5 mm in order to rule out progressive disease. All symptomatic individuals, regardless of skin test results, should have a chest x-ray and sputum specimen submitted for AFB smear and culture.

Skin test, x-ray, and sputum (if done) results should be recorded in each resident's chart or volunteer or employee record with other important medical information. Skin test results should be recorded in millimeters of induration, (e.g., 16mm or 0mm), rather than simply "positive" or "negative."

3. After the initial round of close contact skin testing and chest x-rays have been completed and results recorded in each resident's chart or the volunteer or employee record, staff and residents should be evaluated for the need for isoniazid (INH) infection treatment, following the guidelines of the American Thoracic Society and the Missouri Department of Health. The following persons associated with long-term care facilities are recommended for infection treatment regardless of age:
 - a) Persons with skin test reactions ≥ 5 mm with no symptoms of tuberculosis and no documented history of an adequate course of antituberculosis medications but with fibrotic lesions noted on chest x-ray.
 - b) Persons with skin test reactions ≥ 5 mm with HIV infection and those with risk factors associated with HIV infection whose HIV status is unknown. Preventive therapy may be considered for HIV infected persons who have skin test reactions of <5mm in groups where the prevalence of tuberculosis is high.
 - c) Close contacts of persons with newly diagnosed infectious tuberculosis who have skin test reactions of ≥ 5 mm.
 - d) Recent skin test converters (≥ 10 mm increase within a 2 year period.) ALL children ≤ 4 years with a skin test reaction of ≥ 10 mm are included in this group.
 - e) Persons with skin test reactions ≥ 10 mm and the following medical conditions:
 - Diabetes mellitus
 - Prolonged corticosteroid therapy (>15mg of Prednisone or equivalent daily for 2-3 weeks)
 - Immunosuppressive therapy
 - Hematologic and reticuloendothelial diseases (i.e., leukemia or Hodgkin's disease)
 - IV drug users

Section 9.0. Tuberculosis Control	Page 3 of 4
Subsection 9.2 Guidelines for Tuberculosis Contact Investigation	Issued 7/1/99

- End stage renal disease
 - Chronic undernutrition (i.e., intestinal bypass surgery, gastrectomy, chronic ulcer disease, chronic malabsorption syndrome, chronic alcoholism, cancer of the oropharynx and upper GI tract)
- f) In addition, even in the absence of any of the above risk factors, the following persons with skin test readings ≥ 10 mm are recommended for preventive treatment:
- Foreign-born persons from Latin America, Asia, Africa
 - Medically underserved low income populations, including high-risk racial or ethnic minority populations, especially black, Hispanic, and native Americans
 - Residents, employees and volunteers of long-term care facilities, other health care facilities, schools and child-care facilities

Other Considerations Regarding Tuberculosis Control in Long Term Care Facilities

1. All persons being treated for tuberculosis infection or disease must be monitored monthly for signs and symptoms of adverse reactions. Each person also should be taught the symptoms of an adverse reaction to the medication(s) he is taking, and what to do if such symptoms occur.

It is important that all persons being treated for tuberculosis infection or disease have appropriate baseline liver function tests and other tests which can be compared with subsequent studies should a suspected adverse reaction occur. Abnormal findings on baseline studies must be followed up.

For persons taking only isoniazid (INH) for infection treatment, it is recommended that they have careful monthly monitoring of signs and symptoms of hepatotoxicity (anorexia, nausea, vomiting, dark urine, icterus, persistent fatigue or weakness). Liver enzymes should be monitored if symptoms develop as well as monthly if person is aged 35 or greater.

2. Residents being treated for tuberculosis infection or disease should have their anti-TB drug regimens incorporated into the facility's routine for medication delivery and should be given by a staff person trained to monitor for signs and symptoms of drug toxicity. If such occur, the anti-tuberculosis medications should be withheld and the physician notified immediately.
3. A resident, employee or volunteer who can not or will not complete a recommended course of INH should be counseled to watch for signs and symptoms of tuberculosis disease (persistent cough, anorexia, fever, weight loss) and counseled to seek medical attention immediately if symptoms occur. A notation should be made on the front of the medical or employee record along with the skin test reading and chest x-ray results if a recommended course of INH was not completed. Those who are at high risk of

Section 9.0. Tuberculosis Control	Page 4 of 4
Subsection 9.2 Guidelines for Tuberculosis Contact Investigation	Issued 7/1/99

developing disease should not be where they can expose others for whom the consequences of infection may be especially serious. Repeated chest x-rays are not justified and are ineffective as a means of follow-up for these individuals. These persons should be screened annually for tuberculosis symptoms with screening results documented in their file. However, if the person develops symptoms suggestive of tuberculosis, the person should then be examined by chest x-ray and sputum specimens to rule out disease.

4. Elderly persons who are on numerous medications also need to be monitored for drug interaction with INH. Drug interactions have been reported in patients taking phenytoin (Dilantin); INH potentiates phenytoin toxicity; phenytoin dosage should be reduced and serum levels monitored in patients receiving INH. Interactions with aluminum hydroxide, cycloserine, disulfiram (Antabuse), sodium sulfate, para-aminosalicylic acid (PAS), warfarin, channel blockers, theophylline and levodopa have also been reported.

If the facility has any questions regarding tuberculosis control measures, please contact the local health department or the Section of Vaccine-Preventable and Tuberculosis Disease Elimination at the Missouri Department of Health in Jefferson City. The telephone number is (573) 751-6122.

References

1. American Thoracic Society. Treatment of tuberculosis and tuberculosis infection in adults and children. American Journal of Respiratory and Critical Care Medicine 1994;149:1359-1374.
2. Centers for Disease Control and Prevention. Prevention and control of tuberculosis in facilities providing long-term care to the elderly. Recommendations of the Advisory Committee for Elimination of Tuberculosis. MMWR1990;39(RR10).

Missouri Department of Health
Section of Vaccine-Preventable and
Tuberculosis Disease Elimination
1995

Figure 9.2-1


**MISSOURI DEPARTMENT OF HEALTH
DISEASE CASE REPORT**

REPORT TO LOCAL PUBLIC HEALTH AGENCY

(INSTRUCTIONS ON REVERSE SIDE)

DATE RECEIVED BY LOCAL HEALTH AGENCY

A. CASE IDENTIFICATION (ALL DISEASES)

NAME (LAST, FIRST, M.I.)		DATE OF BIRTH (MO/DAY/YR)	AGE	TELEPHONE NUMBER ()
ADDRESS (STREET OR RFD, CITY, STATE, ZIP CODE)			MEDICAL RECORD NUMBER	GENDER <input type="checkbox"/> M <input type="checkbox"/> F
COUNTY OF RESIDENCE	PATIENT DIED OF THIS ILLNESS <input type="checkbox"/> YES <input type="checkbox"/> NO	PARENT OR GUARDIAN IF A MINOR		
PATIENT EMPLOYED? <input type="checkbox"/> YES <input type="checkbox"/> NO	SCHOOL/DAY CARE/WORKPLACE AND OCCUPATION		ETHNIC ORIGIN <input type="checkbox"/> HISPANIC <input type="checkbox"/> NOT HISPANIC	
RACE <input type="checkbox"/> BLACK <input type="checkbox"/> ASIAN/PACIFIC ISLANDER <input type="checkbox"/> MIXED <input type="checkbox"/> WHITE <input type="checkbox"/> AMERICAN INDIAN <input type="checkbox"/> OTHER (SPECIFY) _____	PATIENT'S COUNTRY OF ORIGIN		DATE ARRIVED IN U.S.A.	
WAS PATIENT HOSPITALIZED? <input type="checkbox"/> YES <input type="checkbox"/> NO	ARRIVED BY AMBULANCE? <input type="checkbox"/> YES <input type="checkbox"/> NO	OTHER CASES? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> UNKNOWN		
RESIDE IN NURSING HOME? <input type="checkbox"/> YES <input type="checkbox"/> NO	NOSOCOMIAL INFECTION? <input type="checkbox"/> YES <input type="checkbox"/> NO			
NAME OF HOSPITAL/NURSING HOME		ADDRESS		

B. PERSON OR AGENCY REPORTING

NAME	DATE OF REPORT (MO/DAY/YR)	TELEPHONE NUMBER ()
ADDRESS	<input type="checkbox"/> PHYSICIAN <input type="checkbox"/> OUTPATIENT CLINIC <input type="checkbox"/> LABORATORY <input type="checkbox"/> HOSPITAL <input type="checkbox"/> PUBLIC HEALTH CLINIC <input type="checkbox"/> SCHOOL	
ATTENDING PHYSICIAN NAME	ADDRESS	TELEPHONE NUMBER ()

C. DISEASE

DISEASE	PLEASE INCLUDE CONFIRMATORY LABORATORY DATA (ATTACH COPY IF AVAILABLE)		
	DATES	TYPE OF TEST	RESULT
			LAB NAME/LOCATION
DATE OF ONSET (MO/DAY/YR)	DATE OF DIAGNOSIS (MO/DAY/YR)	LEAD <input type="checkbox"/> VENOUS <input type="checkbox"/> CAP	COMMENTS

PLEASE COMPLETE THE APPROPRIATE SECTION FOR THE DISEASE BEING REPORTED

SEXUALLY TRANSMITTED DISEASES	D. SYPHILIS	<input type="checkbox"/> GONORRHEA <input type="checkbox"/> CHLAMYDIA (CHECK ABOVE BOXES AS APPROPRIATE)	DATE	TEST	RESULTS	HAS PATIENT BEEN TREATED? <input type="checkbox"/> YES <input type="checkbox"/> NO
	<input type="checkbox"/> PRIMARY (CHANCER PRESENT) <input type="checkbox"/> SECONDARY (SKIN LESIONS, RASH, ETC.) <input type="checkbox"/> EARLY LATENT (ASYMPTOMATIC, LESS THAN 1 YEAR) <input type="checkbox"/> LATE LATENT (OVER 1 YEAR DURATION) <input type="checkbox"/> NEUROSYPHILIS <input type="checkbox"/> CARDIOVASCULAR <input type="checkbox"/> CONGENITAL <input type="checkbox"/> OTHER	<input type="checkbox"/> ASYMPTOMATIC <input type="checkbox"/> UNCOMPLICATED UROGENITAL (URETHRITIS, CERVICITIS) <input type="checkbox"/> SALPINGITIS (PID) <input type="checkbox"/> OPHTHALMIA/CONJUNCTIVITIS <input type="checkbox"/> OTHER (ARTHRITIS, SKIN LESIONS, ETC.)				DATE(S) OF TREATMENT
	TREATMENT NOT INDICATED BECAUSE: <input type="checkbox"/> PREVIOUS ADEQ. TREATMENT <input type="checkbox"/> FALSE POSITIVE				TYPE AND AMOUNT OF TREATMENT	
	DATE OF PREVIOUS TREATMENT: _____					
	PREV. DISEASE/STAGE PLACE:					

ENTERIC DISEASES OR HEPATITIS	E. ENTERIC AND PARASITIC DISEASES AND HEPATITIS A		TREATMENT	F. HEPATITIS <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> PRENATAL <input type="checkbox"/> OTHER		
	CHECK BELOW IF PATIENT OR MEMBER OF PATIENT'S HOUSEHOLD (HHLD):	PATIENT YES NO UNK	HHLD MEMBER YES NO UNK	DRUG	(CHECK ALL TESTS PERFORMED)	
	IS A FOOD HANDLER				JAUNDICED: <input type="checkbox"/> YES <input type="checkbox"/> NO	
	ATTENDS OR WORKS AT A DAY CARE CENTER				JAUNDICE ONSET DATE: _____	
	IS A HEALTH CARE WORKER				CARRIER? <input type="checkbox"/> YES <input type="checkbox"/> NO	
			<input type="checkbox"/> NO TREATMENT	ALT	AST	
					TEST POS NEG	
					HAV-IgM	
					HBcAb-IgM	
					HBsAg	
					HBsAb	
					HBcAb	
					Hep C	

TUBERCULOSIS	G. <input type="checkbox"/> DISEASE OR <input type="checkbox"/> INFECTION	X-RAY <input type="checkbox"/> NORMAL (DATE) _____ <input type="checkbox"/> ABNORMAL (DATE) _____	BACTERIOLOGY	TREATMENT	DOSAGE
	TUBERCULIN TEST (DATE)	(CHECK ONE) <input type="checkbox"/> STABLE <input type="checkbox"/> CAVITARY <input type="checkbox"/> WORSENING <input type="checkbox"/> NONCAVITARY <input type="checkbox"/> IMPROVING <input type="checkbox"/> NOT DONE <input type="checkbox"/> UNKNOWN	TYPE OF SPECIMEN	<input type="checkbox"/> ISONIAZID	
	RESULTS (MM INDURATION)		SMEAR (DATE) _____ POS NEG PEND-ING	<input type="checkbox"/> ETHAMBUTOL	
	TYPE OF TEST (CHECK ONE) <input type="checkbox"/> MANTOUX (5TU-PPD) <input type="checkbox"/> MULTIPLE PUNCTURE DEVICE <input type="checkbox"/> NOT DONE	PREVIOUS TB DISEASE <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> UNK	CULTURE (DATE) _____ POS NEG PEND-ING REPORT DATE _____ <input type="checkbox"/> NOT STATED OR UNKNOWN <input type="checkbox"/> NOT DONE IF CULTURE POSITIVE: <input type="checkbox"/> M. TUBERCULOSIS <input type="checkbox"/> ATYPICAL MYCOBACTERIA (SPECIFY) _____	<input type="checkbox"/> PYRAZINAMIDE	
				<input type="checkbox"/> RIFAMPIN	
				<input type="checkbox"/> OTHER (SPECIFY)	
				DATE TREATMENT STARTED	



MISSOURI DEPARTMENT OF HEALTH
BUREAU OF TUBERCULOSIS CONTROL
TUBERCULOSIS DRUG MONITORING

Figure 9.2-2

PATIENT NAME				LOCAL HEALTH UNIT											
DATE OF BIRTH		AGE	CHART NUMBER				<input type="checkbox"/> SUSPECT, DIAGNOSIS PENDING <input type="checkbox"/> PROPHYLAXIS				<input type="checkbox"/> TB CASE <input type="checkbox"/> MOTT				
DATE OF DRUG PICKUP		BASELINE													
DATE OF NEXT VISIT															
INH _____ mg															
Rifampin _____ mg															
Ethambutol _____ mg															
PZA _____ mg															
Vitamin B ₆ _____ mg															
(OTHER) _____ mg															
SPUTUM COLLECTED (Y OR N)															
PATIENT'S WEIGHT (lbs.)															
LIVER ENZYME COLLECTED (Y OR N)															
WAS COMPLIANCE REINFORCED (Y OR N)															
ADVERSE EFFECTS ALL DRUGS	Fatigue, Weakness*														
	Fever*, Chills*														
	Loss of Appetite*														
	Nausea, Vomiting*														
	Jaundice														
	Dark Brown Urine														
	Rash, Itching*														
	Joint Pain														
INH	Peripheral Neuritis														
ETHAM-BUTOL	Blurred Vision														
	DECREASED VISION	Rt.													
		Lt.													
	Decreased Red/Green Discrimination														
STREP	Vertigo														
	Decreased Hearing														
RIFAMPIN	Birth Control Pills Taken?														
ANY DRUG	Other Symptoms														
C.H.N. NAME															
(SIGNATURE)															

Section 9.0. Tuberculosis Control	Page 1 of 2
Subsection 9.3 Transfer of Residents With Suspected or Confirmed TB	Issued 7/1/99

TUBERCULOSIS CONTROL

Transfer of Residents With Suspected or Confirmed Tuberculosis

Residents with suspected or confirmed active pulmonary tuberculosis will be transferred to a facility with appropriate tuberculosis isolation facilities. All personnel with resident contact will have a single **baseline tuberculosis skin test** (Mantoux) and a **medical history** taken when hired. These personnel should also receive initial **training** about tuberculosis and the facilities policies and procedures. This training should be repeated annually.

In order to deal effectively and efficiently with residents with suspected or confirmed tuberculosis the following procedures should be implemented.

Early Identification of Residents With Suspected or Confirmed Pulmonary Tuberculosis

Residents with signs and symptoms of active pulmonary tuberculosis (i.e., fatigue, night sweats, fever, unexplained weight loss, chronic and productive cough, hemoptysis and/or chest pain) should be cared for as though the resident has tuberculosis until it is ruled out.

Exposure Determination

The resident should be attended to by as small a number of health care providers as possible. All of those providing care to the resident after it is determined that the patient may have infectious pulmonary tuberculosis **MUST BE TRAINED** regarding the proper procedures to follow. (See Subsection 9.4 Instructions for Facilities Equipped to Manage Patients With Suspected or Confirmed Tuberculosis.) All personnel who may have had an exposure to the resident during a time when the patient may have been infectious should notify their supervisor of the possible exposure. This will be helpful later if the resident is found to have pulmonary tuberculosis. A list of those exposed will facilitate appropriate contact investigation.

Masking and Segregation

Tuberculosis is transmitted by the airborne route only. The patient will need respiratory precautions in addition to Body Substance Precautions. When a resident is suspected of having active pulmonary tuberculosis and is not respiratory compromised, it is preferable to place a surgical mask on the resident and to segregate him/her in a **PRIVATE ROOM** until the transfer occurs. As long as the resident is wearing a surgical mask, there is no need for the

Section 9.0. Tuberculosis Control	Page 2 of 2
Subsection 9.3 Transfer of Residents With Suspected or Confirmed TB	Issued 7/1/99

staff to wear respiratory protection. (REASON: The surgical mask will cause the patients secretions to be expelled onto the surface of the mask. Thus large droplets are trapped on the mask and droplet nuclei are not expelled into the air.).

If the resident cannot tolerate the placement of a surgical mask, a cough suppressant may be considered and/or the resident is to cover his/her mouth with a disposable tissue when needing to cough AND all persons/personnel in the area must wear N-95 or HEPA masks.

Transfer

The facility to which the resident is being transferred should be contacted and advised of the resident's diagnosis. The transfer should take place in an expeditious manner and long delays should be avoided. This will assist in keeping the number of possible exposures to other residents and staff to a minimum. Those providing transportation (e.g. ambulance, police, private vehicle, etc.) should be advised of the resident's status and provided appropriate infection control instructions.

If the transfer is delayed, place resident in a room with plenty of sunshine and where a window can be opened. Place a fan pointing outward in the window to create negative air pressure. The window should not open to another room or be near an intake vent for the facility. An alternative, if feasible, is to place the resident outside on a porch.

Recordkeeping

The facility will maintain records on the results of all baseline skin testing and medical history on personnel with resident contact and will keep records on the results of skin tests performed on exposed employees.

Prophylaxis

All personnel who convert their PPD skin test should be promptly provided a medical evaluation and prophylactic medication, when appropriate, to reduce their risk of acquiring tuberculosis. (See Subsection 9.2 Guidelines for Tuberculosis Contact Investigation in Long Term Care Facilities)

Section 9.0. Tuberculosis Control	Page 1 of 4
Subsection 9.4 Residents With Suspected or Confirmed Tuberculosis	Issued 7/1/99

TUBERCULOSIS CONTROL

Instructions for Facilities Equipped to Manage Residents With Suspected or Confirmed Tuberculosis

An effective tuberculosis (TB) control plan requires early identification, isolation and effective treatment of persons who have active tuberculosis.

Early Identification

Physicians and nurses must have a high index of suspicion regarding tuberculosis. Any resident with signs and symptoms of active tuberculosis, such as night sweats, fever, cough, or hemoptysis, should be treated as though they have TB until it is ruled out. In addition, all new residents are to have a two-step PPD skin test performed upon admission to the facility as required by Department of Health rule 19 CSR 20-20.100 (See Appendix E)

Treatment/Discharge

The appropriate treatment of tuberculosis will assist in patient recovery and in decreasing the risk of the development of antibiotic resistant *Mycobacterium tuberculosis*. To assist the physician in assuring patient compliance in taking their medications proper discharge planning from an acute care setting should include collaboration with public health authorities. The Department of Health must be notified of suspected or confirmed cases of tuberculosis prior to discharge from the facility to assure proper coordination of the discharge.

Isolation/Stop Sign Alert

Residents with suspected or confirmed TB should be immediately separated from other residents and placed in a separate area or an isolation room with negative air pressure. Residents should be placed on "Stop Sign Alert" status in a private room equipped with negative air pressure and 6-12 air exchanges per hour. A "Stop Sign Alert" sign is placed on the front of the door. Those caring for the patient and those entering the room of a patient with suspected or confirmed tuberculosis must wear appropriate respiratory protection (N-95 or HEPA mask). The patient should be given a surgical face mask, a box of tissues and instructions regarding the use of these items. A surgical face mask should be placed on the patient for transportation or when they cannot immediately be taken to an appropriate isolation area. (See Precautions for Residents With Airborne Diseases in Subsection 3.2 Implementing the Body Substance Precautions Systems)

Residents placed in Stop Sign Alert with suspected tuberculosis should remain in isolation until TB is ruled out. Stop Sign Alert should be discontinued only when another diagnosis is confirmed or the patient has had:

1. Adequate **chemotherapy** for at least 2-3 weeks
AND
2. **Clinical and bacteriologic** response to therapy, such as:
 - reduction in cough
 - resolution of fever
 - progressively decreasing quantity of bacilli on smear. Most experts agree that the non-infectiousness in pulmonary TB can be established with negative acid-fast bacilli (AFB) smears on **three** consecutive days for a patient on effective therapy. A single negative smear is not adequate. At least **three** negative smears are necessary to achieve 95% sensitivity.

THE INFECTION CONTROL COORDINATOR MUST BE NOTIFIED BEFORE ISOLATION IS DISCONTINUED ON THESE RESIDENTS.

The ventilation systems in rooms for isolating residents with suspected or confirmed pulmonary tuberculosis will be routinely monitored to assure the rooms remain under negative pressure and that there is sufficient air exchanges. When in use, these rooms will be monitored daily to assure the system is functioning properly.

High-Hazard Procedures

Procedures performed on individuals with suspected or confirmed tuberculosis in which the potential for being exposed to *M. tuberculosis* due to the reasonable anticipated generation of aerosolized *M. tuberculosis* are classified as high-hazard procedures. These procedures include but are not limited to:

- sputum induction
- bronchoscopy
- endotracheal intubation or suctioning
- aerosolized administration of pentamidine or other medications
- pulmonary function testing.
- autopsy

All high-hazard procedures performed on individuals with suspected or confirmed tuberculosis shall be conducted in a room, area or environment that has negative air pressure and is either exhausted directly to the outside or recirculated through a HEPA filter. All persons performing high-hazard procedures must wear respiratory protection (N-95s as a minimum) except when procedures are performed in an isolation chamber, which separates the health care worker, from the patient and his/her air.

Section 9.0. Tuberculosis Control	Page 3 of 4
Subsection 9.4 Residents With Suspected or Confirmed Tuberculosis	Issued 7/1/99

Health Care Worker Monitoring and Training

All staff who provide care to residents with suspected or confirmed pulmonary tuberculosis must:

1. Receive PPD skin testing at least annually. Skin testing may be done at more frequent intervals if deemed necessary
2. Receive annual training regarding the epidemiology and prevention of tuberculosis.
3. Receive training regarding the appropriate use of respiratory protection.

Exposure Management

Any person who may have had exposure to a patient with confirmed tuberculosis prior to the diagnosis and implementation of proper isolation and respiratory protection should notify their supervisor.

When residents enter the facility and are later diagnosed with infectious pulmonary tuberculosis, the facility will perform an investigation and notify possibly exposed staff. Baseline PPD skin tests will be performed on those who have not had a recent PPD skin test for TB and will then be followed up with a repeat skin test in 3 months. Any staff member who converts their PPD skin test should be managed medically with appropriate treatment, evaluation, care and follow-up. (See Subsection 9.2 Guidelines for Tuberculosis Contact Investigation in Long Term Care Facilities)

Section 9.0. Tuberculosis Control	Page 4 of 4
Subsection 9.4 Residents With Suspected or Confirmed Tuberculosis	Issued 7/1/99